

rill having been seen at the same time as a bright line. Clouds coming over prevented me from further examining *Hippalus* on the evening of October 19, 1866.

As on the four occasions alluded to above the observations so far confirm each other as to indicate that observations made with small instruments are deserving of attention, and that the smallest of the Society's astronomical telescopes may be used with advantage, I trust I may be allowed thus far to take up the time of the Meeting with a subject otherwise unimportant.

On the Obscuration of the Lunar Crater "Linné."

By W. R. Birt, Esq.

The interesting phenomenon of a change in the appearance of the crater "Linné" was communicated to me by Herr Schmidt, the Director of the Observatory at Athens, an extract from whose letter is as follows :—

"Athènes, Nov. 17, 1866.

"Monsieur,—Depuis quelque tems je trouve qu'un cratère de la lune situé dans le plaine du *Mare Serenitatis*, n'est plus visible. Cette cratère nommé par Mädler 'Linné' se trouve dans la quatrième Section de Lohrmann sous le signe A. Je connais ce cratère depuis 1841, et même en pleine lune il n'était pas difficile de l'apercevoir; 1866 en Octobre et Novembre, à l'époque du maximum de son apparence, c'est à dire un jour avait le lever du soleil à son horizon, cette profonde cratère, dont le diamètre est 5·6 milles Anglais, était parfaitement disparu; seulement un lueur, un petite nuage blanchâtre se présentait au lieu de Linné. Auriez-vous bien la bonté de faire quelques observations sur cette localité.

"J. F. JULIUS SCHMIDT."

The earliest information respecting the crater I received from Mr. Buckingham, who favoured me with a copy of a photograph taken by him on November 18, 1866. On this photograph the place of "Linné" is visible, but faint. I have during the last lunation received records of observations from the following gentlemen: Doctors Mann and Tietjen, and Messrs. Talmage, Webb, Slack, Grover, and Jones. On the 13th, when the terminator passed over the east boundary of the *Mare Serenitatis*, the place of "Linné" was seen by Messrs. Webb and Talmage; Mr. Webb's aperture $9\frac{1}{4}$ -inch silvered glass reflector, and Mr. Talmage's 10-inch refractor of Mr. Barclay at Leyton. Mr. Webb described the appearance as an ill-defined whitishness on the site of "Linné." Mr. Talmage recorded "a dark circular cloud." The exact position of these appearances was carefully ascertained afterwards and found to agree with the place of "Linné." Doctor Mann and

I at Leyton were prevented by a thin veil of cirrus seeing the "cloud" recorded by Mr. Talmage. With smaller apertures both Mr. Grover and I were unable to detect the slightest trace of "Linné," while the small crater "Linné B" of Beer and Mädler, and also Bessel, were very distinct *with the shadows within them*. On the following evening, December 14, observations were made by Messrs. Webb, Slack, Grover, and Birt. A white spot was seen in the position of "Linné." Mr. Webb described it as the most conspicuous object on the E. half of the *Mare Serenitatis*. Mr. Slack saw a whitish spot not remarkably bright, but could see no trace of a crater. Mr. Grover recorded "a tolerably defined roundish whitish speck," but he could not see the interior or margin of the crater, and "in this respect the spot showed very different from Bessel and other craters which were well seen." My own observations perfectly agree with the above. I estimated the light at 3° . On the 15th the spot was brighter, and I obtained the measures recorded below. On the 16th Messrs. Jones and Grover described the appearance as a white spot not over bright.

On the 20th Professor Foërster and Dr. Tietjen observed "Linné" with the Berlin Refractor. The following is the translation of the letter which I received from Dr. Tietjen, dated Berlin 21, December 1866 :

"On viewing the Moon last night about 13^h M.T. Berlin with our refractor, in order to convince ourselves of the disappearance of the crater 'Linné,' Professor Foërster and I perceived that crater very distinctly. If, therefore, an obscuration has taken place on which certainly no doubt can exist, as it is affirmed by so competent an authority as Herr Schmidt of Athens, it has evidently now ceased."

Although Dr. Tietjen considers that the obscuration *has ceased* it does not appear that either he or Professor Foërster *has seen into* the crater.

The whole of the observations are so accordant among themselves, and the measures appended so clearly indicate the white spot to be larger than the crater "Linné," as to leave no doubt that a change of some kind has taken place; and this conclusion appears to be supported by previous records which are here appended :—

Date.	Authority.	Brightness.
1653	Riccioli	0
1788, Nov. 5	Schröter	0.5
1823, May 28	Lohrmann	7.0 +
1831, Dec. 12, 13	Beer and Mädler	6.0
1858, Feb. 22	De la Rue	5.0
1865, Oct. 4	"	5.0
	Rutherford	6.0
1866, Nov. 18	Buckingham	2.0

The last four determinations of brightness are from photographs. There is some uncertainty in determining this element on the prints. Schröter, in plate ix. of his *Selenographische Fragmente*, gives a large dark spot in the place of "Linné;" and the Rev. T. W. Webb informs me that "Linné" is not to be found on Russell's globe or maps, 1797, from which it may be inferred that the crater has previously been obscured.

The following measures were made during the last lunation:—

Date. 1866.	Dionysius.	Linné.	Mag.	Miles.	Brightness.
Dec. 15	14.70	11.61	0.79	10.9	4
18	14.13	7.07	0.50	6.9	5.5
19	13.95	7.32	0.52	7.2	5
21	13.32	6.75	0.51	7.0	4

The numbers in column 4 headed "Mag." are obtained by dividing the measures of "Linné" by the measures of the standard spot "Dionysius." The normal magnitude of "Linné" is 0.40 ("Dionysius" being unity) as determined by two independent methods. The numbers in column 5 headed "Miles" are not absolute, but only relative as compared with "Dionysius," by means of the numbers in column 4. "Dionysius" according to Lohrmann, is 13.8 English miles, and "Linné" according to Schmidt, 5.6 English miles in diameter. During the lunation no trace of the crater has been seen.

Minor Planet (91).

Elements calculated by Dr. Tietjen, *Ast. Nach.* No. 1621, from Leipzig observation of 10 Nov. and Berlin observations of Nov. 17, 27, and Dec. 8:—

1866, Dec. 8.0, Berlin M.T.

$$\begin{array}{rcl}
 M & = & 329^{\circ} \ 2' \ 6.5'' \\
 \pi & = & 71 \ 38 \ 51.2 \\
 \Omega & = & 11 \ 1 \ 48.7 \\
 i & = & 2 \ 7 \ 58.0 \\
 \phi & = & 6 \ 36 \ 58.0 \\
 \mu & = & 848'' \cdot 428 \\
 \text{Log } a & = & 0.414265
 \end{array}
 \left. \vphantom{\begin{array}{l} M \\ \pi \\ \Omega \\ i \\ \phi \\ \mu \end{array}} \right\} \text{Mean Equinox, 1866.0.}$$

The elements represent the longitudes accurately; for the latitudes they give

$$C - O \quad + 0''.9 \quad - 0''.7 \quad - 1''.1 \quad + 0''.8.$$